



SUSTAINABLE

The switchgear of the future is at the door

SF6 free, being the spark that is going to revolutionize our industry

Elfack May 2019 – Schneider Electric



SUSTAINABLE

The SF6 free transition is coming!



PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

“We are committed to solving the SF6 issue with new alternatives in five years and to eliminating SF6 from Schneider Electric products in 10 years”

Jean-Pascal Tricoire
Chairman & CEO Schneider Electric
Speaking in 2015

Moving away from SF6 is more than a technological change...

- MV switchgear are critical to the **safety and security** of people and assets
- MV switchgear are going far beyond electrical companies, this concerns **all segments**
- MV switchgear are used in public areas and require special **health & safety** consideration
- Beyond SF6 free, the stake is the carbon footprint of MV switchgear and the **full life cycle** needs to be considered

...it requires a shift in mind-set!

Since 2009, we have been working on SF6 alternatives, we have been very active within the T&D Europe Association and we communicate regularly at international events such as, CIRED or CIGRE

We believe that moving away from SF6 must be of a benefit to both our industry and society.

We consider that we cannot afford taking risks by choosing unproven alternatives, especially new gas.

We have to make the most of the SF6-free transition...

To prepare the switchgear of the future...green, digital and safe
by addressing four critical concerns



Cost efficiency
for our customers



Improved
sustainability



Peace of mind for
health & safety



Responsible
installed base
management



INNOVATION

Schneider Electric has prepared the required SF6 free bricks

We strongly believe in two principles: ① Switching

What are the alternatives?

Air	Going back to the past! Not reliable, large	✗
Gas	Hazardous! Gas toxicity and by-product	✗
Vacuum	Proven! Used WW clean and safe	✓

What do we believe in?

Stop breaking in gas!

Eliminate health & safety issues linked with the gas itself, as well as the by-product

Today, the only clean, safe, reliable and proven ground-breaking technology is **vacuum!**

We strongly believe in two principles: ② Dielectric

What are the alternatives?

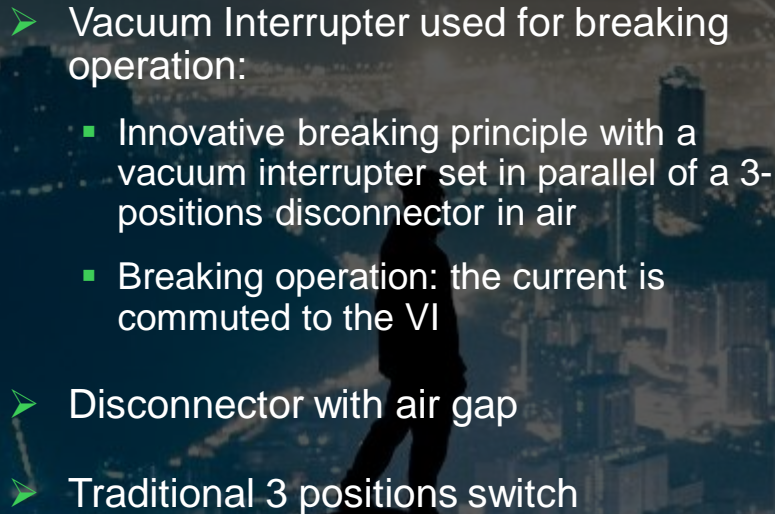
Solid	Complex! Expensive Hampering modularity	✗
Gas	Hazardous! Gas toxicity	✗
Air	Proven!	✓

What do we believe in?

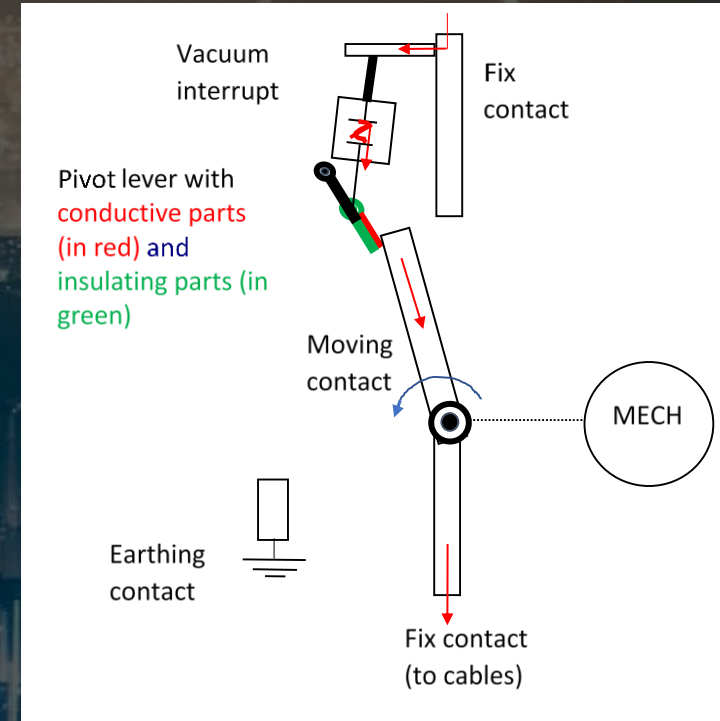
The best gas, is air!

When the dielectric capacity of air
is challenged (for instance above 36kV)
pick a green, safe and proven gas

Our solution : 3 positions load break switch in air with parallel vacuum interruption ...

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- Vacuum Interrupter used for breaking operation:
 - Innovative breaking principle with a vacuum interrupter set in parallel of a 3-positions disconnector in air
 - Breaking operation: the current is commuted to the VI
 - Disconnector with air gap
 - Traditional 3 positions switch

→ ... enables to have a compact and cost effective solution



Our solution : pure air insulation for AIS and GIS switchgear

➤ Pure air is the best insulating medium for MV switchgear:

- $P = 1,4$ bar abs for 12 kV
- $P = 2,5$ bar abs for 24 kV

➤ parallel vacuum interruption technology enables:

- Safe, compact and cost-effective 3 positions load break switch
- AIS and GIS switchgear with same dimensions as SF6 ones
- Fully interchangeable with SF6 switchgear



We are going live!

Following our COP 21 commitment we will go live in 2019 with a set of pre-series private customers and electrical companies leveraging :

The **dry air** version
of our star offer
SM6 (AIS) in 12
and 24 kV

The **dry air** version
of our well known
GHA (GIS) in 12
and 24kV

The **HFO** version of
of our well known
GHA (GIS) in 36kV



FUTURE

Are you ready for the switchgear of the future?

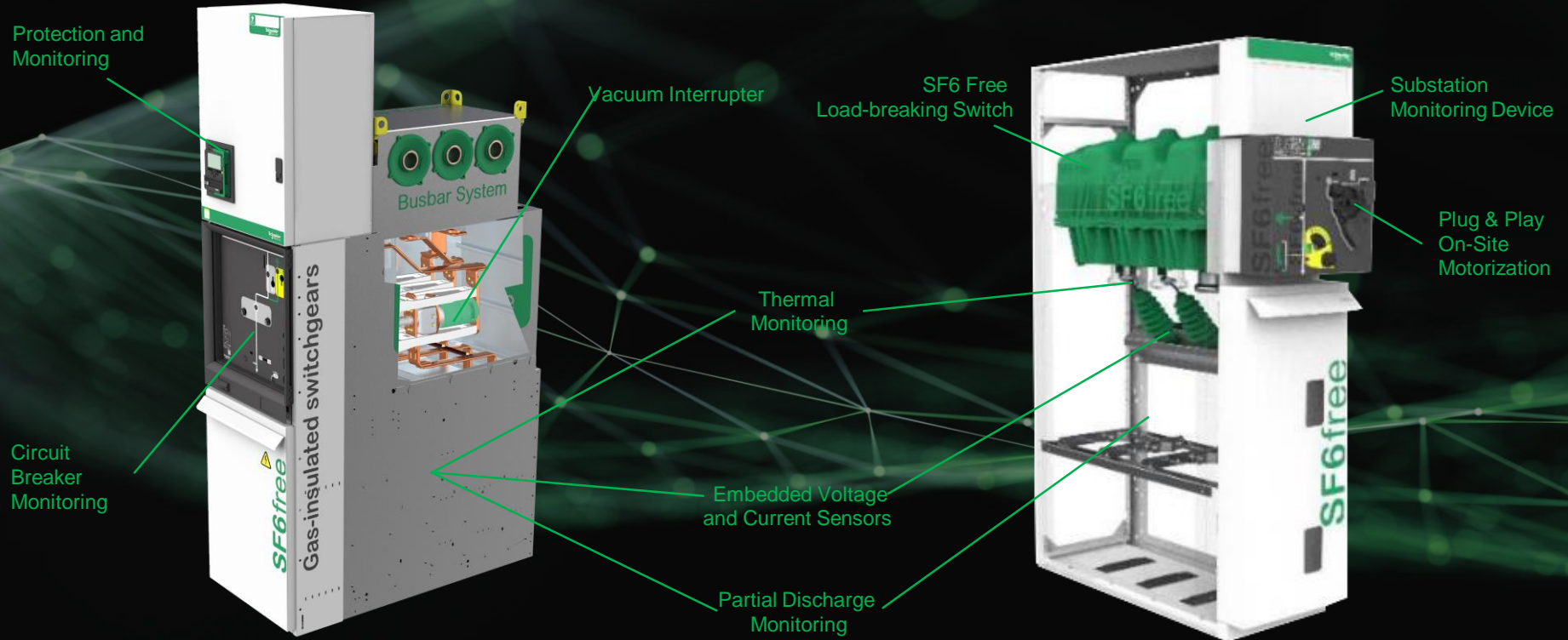
Green and Digital...That's the way we define the switchgear of the future !

Leveraging our EcoStruxure momentum we take the opportunity of the SF6 free transition to build the switchgear of the future organizing the convergence of our two core beliefs : **DIGITAL** and **SUSTAINABILITY**

Doing so, we combine and reinforce our values :

SIMPLER COMPLIANT SAFER RELIABLE EFFICIENT

Green and Digital...



Life Is On



Schneider
Electric